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Internal auditors, managers and the framing of continuous monitoring: A case study of an Australian Wholesale company

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ABSTRACT

Recent technological advances, compliance imperatives and trends in governance and risk management have renewed attention and increased demand for continuous assurance (CA) and continuous monitoring (CM) more specifically. Whilst these areas have a history spanning close to three decades, significant uncertainty remains about how CM may be effectively implemented at a theoretical and practical level, with limited empirical based studies. The aim of this paper is to report on a case study of an implementation of CM in an Australian wholesale company. Broadly, a social constructionist of technology (SCOT) perspective is adopted and the implementation process is explored as a sociology of translation. Within this research framework a technological frames analysis is employed to examine auditors' and managers' understanding and experiences of CM, the meanings assigned by them, and how this influences their actions related to its implementation and use. Implications for further research and practice are considered.

Keywords

Continuous auditing, continuous monitoring, technological frames, internal audit

INTRODUCTION AND MOTIVATION

Continuous monitoring (CM) is increasingly recognized as a way to effectively monitor the internal controls of an organization (see for eg. Chan and Vasarhelyi 2011; Coderre 2005; ISACA 2010) as technologies advance, regulatory pressures increase and business environments rapidly change requiring more frequent monitoring procedures to mitigate risk (Hunton, Mauldin and Wheeler 2008). A recent PwC (2011, 23) survey of chief audit executives highlighted "continuous auditing or monitoring" as a significant factor in increasing internal audit responsibilities over the next five years and use of related software applications doubling by 2012 (p. 47). This has renewed attention in the area, but significant uncertainty remains for auditors and managers as to the practicalities of how it may be effectively implemented into an organization's governance, risk and compliance landscape (De Aquino, Da Silva and Vasarhelyi 2008) and the potential transformative effects on audit practices (Vasarhelyi, Alles and Williams 2010).

There is a diverse body of continuous assurance (CA) research, traversing different disciplinary fields (Brown, Wong and Baldwin 2007) and a history close to three decades (Hardy 2011). However much of the work has been conceptual with limited uptake in practice (Alles, Kogan and Vasarhelyi 2008). Recent reviews have identified the need for alternative theoretical perspectives and empirical based studies of adoption and implementation, as current theory typically focuses on the development of prototype systems and prescriptive frameworks (Alles et al, 2008; Brown et al, 2007; Kuhn and Sutton 2010). Empirical studies that have been conducted have tended to use economic based theories to explain, for example, the economic feasibility of CA (El-Masry and Reck 2008) and its impact on managerial behaviors (Hunton et al. 2008) or archival based research to examine the potential benefits of using internal control monitoring technology (Masli, Peters, Richardson and Sanchez 2010). Such views provide valuable insights but assume that the process is unproblematic and that management is capable of recognizing the need for and intrinsic value of CA and CM initiatives downplaying contextual factors and local level practices (Hardy 2011). Finally, a variety of labels are used, sometimes interchangeably, to describe activities in this area, such as continuous assurance, continuous auditing, continuous monitoring and continuous control monitoring (see Hardy 2011 for a detailed review). The multiple labels and meanings highlight the range of stakeholder

interests in this space incorporating for example technology vendors, professional associations, internal and external auditors, IT managers and business managers focusing attention on the need to investigate how stakeholders' make sense of and frame their meaning of CM in its implementation and use.

The aim of this paper is to report on the early implementation and use of CM in an Australian wholesale organization. The research broadly adopts a socio-technical change view inspired by a social construction of technology (SCOT) (eg. Bijker, Hughes and Pinch 1987) perspective and explores implementation as a process of translation (Callon 1986a; Latour 1999) of ideas, interests and actions. Within this research framework a technological frames analysis is employed to examine auditors' and managers' understanding and experiences of CM, the meanings assigned by them, and how this influences their actions related to its implementation and use. In doing so three key objectives are served. Firstly, an empirical based case study of the implementation of CM in an Australian company is provided. Secondly, an alternative perspective is proposed that seeks to identify the meanings and interests involved in CM. Finally practical insights about the implementation of CM for auditors and managers are provided.

The paper is structured as follows. Firstly, the research framework is discussed. Secondly, the research study is described. The case description and findings follows. Finally, the last section discusses the implications, limitations and conclusion.

RESEARCH FRAMEWORK

Technological frames of reference

The technological frames of reference (TFR) concept has been widely used in the IS literature (see Davidson 2006) with the work of Orlikowski and Gash (1994) commonly cited. Orlikowski and Gash (1994, 178), drawing from a socio-cognitive perspective, define technological frames as:

> "the assumptions, expectations, and knowledge … [used] … to understand technology in organizations. This includes not only the nature and role of the technology itself, but the specific conditions, applications, and consequences of that technology in particular contexts."

That is, understandings of technological artifacts are not just about the knowledge of a particular technology itself, but also its uses in particular settings (Orlikowski and Gash 1994). These "frames" act as "webs of meaning that are flexible in structure and content and that shift in salience over time and context" (Davidson 2006, 25). Orlikowski and Gash (1994) drew from the social construction of technology (SCOT) studies and in particular the work of Bijker et al. (1987), utilizing the concepts of relevant social groups and shared frames (Davidson 2006). Biker (1987, 108) defines technological frames as

> "the ways in which relevant social groups attribute various meanings to an artifact"

structuring the concept broadly to include "different elements as current theories, goals, problem solving strategies, and practices of use" (Bijker 1987, 171).

Whilst the TFR concept assists in examining the construction of individuals' or groups' experiences with respect to making sense of technology, it is limited in developing understanding of how individuals' technological frames and "attitudes towards the technology develop in relation to others' and in an organizational context" (Lin and Cornford 2000). In following Davidson's (2002) recommendation concepts from actor-network theory are drawn upon to further inform analysis.

Actor network theory (ANT): Processes of translation

In adopting an ANT view (see for eg. Callon 1986a, 1986b, Latour 1999) CM is conceptualized as emergent assemblages or collectives of human and non human actors that come together to create relatively stable arrangements. Hence some technological capability or social relation does not determine CCM outcomes. Rather it is the alignment of interests dependant upon the enrolment of a sufficient body of allies and the translation of their interests. *Translation* is both an endeavor of and achievement from assembling and aligning interests of multiple actors (Callon 1986a, 25). Organizing processes and devices broadly determine the interests and subjectivities allowable in and excluded from the actor network. The *enrolment* of actors occurs broadly through persuasion, incentives and processes of negotiation. *Mobilization* of the allies occurs when the technology, solution or fact gains broad acceptance, stabilizing the network, temporarily. Actors establish themselves as indispensable through the creation of obligatory points of passage that other entities need to pass through (Callon 1986a, 26). The term *inscription* refers to "the types of transformation through which any entity become materialized into a sign, an archive, a document, a piece of paper, a trace" that are "always mobile" in terms of "allowing new translations…" (Latour 1999, 306-307).

The two analytical frameworks raise questions concerned with: what frames of CM do internal auditors and users share; and how CM gets started, develops and is performed in organizations.

RESEARCH STUDY

Interpretive case study approach

An interpretive case study approach (Stake 1995) was used given the theoretical perspectives that underpinned the study. That is, rich and detailed descriptions of CM were required so as to draw out contextualized meanings of CM in practice, in terms of how it is used and the techniques, procedures and systems used.

Case site, data collection and analysis

The case site is a wholesale company in Australia and has been given an alias, 'Wholesaler' for reasons of anonymity and confidentiality. Primary data was collected from interviews with the internal auditors and business managers as set out in Table 1. Interviews were recorded and transcribed, seven hours in total. In addition over a period of six months, numerous informal discussions were held with the Group Internal Audit Manager, Internal Audit. These conversations were recorded in field notes. In addition, secondary data comprising publically available information on the organization's web site also contributed to the data collected. Content analysis and descriptive coding (Saldaña 2009) were used in the first stages of coding. Transcripts were examined to identify interpretations and expectations of CM, "practices of use" and key events, actors and actions.

Participant	Position/Role	Years in current role at Wholesale	Professional background	Number of interviews	Total interview time
George	Group Internal Audit Manager	Eleven years	Accounting and audit	2	60 minutes 60 minutes
Steven	Internal Auditor – Data Analytics	Four years	Accounting, AIS, data analyst	2	64 minutes 15 minutes
Mathew	Data Administration for product lines	Nine years	Labor manager, Police officer	1	50 minutes
Chris	GM Finance	One year	More than 20 years in accounting	1	26 minutes
Ken	National accounts payable manager	Twelve years	Thirty years working at Wholesale	1	28 minutes
Jason	National credit manager	One year	Accounts payable, accounts receivable, software consultant, systems accountant.	1	51 minutes
Jack	Commercial Manager	Five years	More than 15 years working in the Wholesale organization in accounting based roles.	1	45 minutes
Jane	Payroll Manager	Thirteen years	Payroll manager for approximately 20 years and in payroll for between 35 to 40 years.	1	20 minutes

Table 1. Summary of participants

CASE DESCRIPTION

Organizational Background

Wholesaler is a marketing and distribution company in the wholesale industry and currently listed in the top 100 companies on the Australian Stock Exchange. The company originated in the 1920s as a family business and experienced significant growth between the 1950s and early 1990s primarily through acquisitions. It has over 5000 employees and operations across Australia and New Zealand. An international company acquired a controlling interest in the late 1990s following a period of poor performance. After the acquisition, the composition of the Board of Directors and senior executive team was changed. Four business divisions were restructured and technology investments made including a new warehouse system. Throughout its history, Wholesaler has been a strong investor in technologies.

The IT environment: complex and changing

The IT environment is complex and changing. The warehouse management system interfaces with an enterprise mainframe system and a third midrange system, which is being progressively rolled-out across the various operational divisions with a view to ultimately decommission the legacy mainframe systems. These systems manage the key enterprise processes (purchases and sales). SAP, a recent implementation, is used for the financial platform and also has a GRC solution. Chris21 is used for the payroll, as well as some other smaller systems. More recently the business has developed a data warehouse facility to aggregate data because of the fragmented view provided by legacy systems.

Transaction environment: "the volume of transactions is just astounding"

In accounts payable there are more than 760,000 invoices a year. In addition, there are another 1,500,000 invoices that go through "the charge through system" for suppliers who deliver direct to customer stores. They invoice Wholesaler directly who then subsequently charge the individual customer store. In the accounts receivable area there is approximately 650,000 to 700,000 transactions each month. There are "about 90,000 to 95,000" payments a month with "varying degrees of sophistication." Some payments are made directly to Wholesale through for example BPAY, an Australian payment system where payments can be made through a financial institution's online or telephone banking facility to a registered BPAY biller. In addition, they also receive approximately 280,000 cheques a year, which are manually intensive.

CA Architecture: "It's about the data" and a "robust and sustainable architecture"

There are three layers to the CA "architecture" in Wholesaler:

1. ACL Direct Link™ for SAP is used to extract data from the SAP tables
2. ACL applied analytics is used to analyze transactions
3. Symsure/CaseWare is used to manage workflows associated with the assignment and management of exceptions through their assignment to specified users and their ultimate resolution.

Where non SAP data is involved, other techniques are used to upload information to the CA system. A Window scheduler is used to schedule the data extraction and analysis on a daily basis.

CASE STUDY FINDINGS

Frames of CM

This section presents the findings from the technological frames analysis. Three domains of technological frames were identified as summarized in Table 2. Whilst there were individual variations, common elements were identified. For the purpose of analysis the results are presented separately but they are closely intertwined.

Frame domain	George	Steven	Mathew	Chris	Ken	Jason	Jack	Jane
Nature of CM • View of CM • Technical capabilities • Problem solving	**View of CM** – *a service & independent process* "CM occurs when we are providing a service to management, so they can more effectively monitor transactional data flows … " **Problem solving** – *improve control* "… the original initiative arose due to a need to provide useful data to the business in the context of stock accounting." **Capabilities** – *robust architecture* "Many people try and do this with Excel … You need an architecture that allows for retention of exception data and its reliable delivery to end users…"	**View of CM –** *understanding corporate data* "When I started doing CM reports, I knew where the data was, how much data I had and where the other possibilities of getting the data were." **Capabilities** – *workflow* "… we were producing exceptions in Excel reports. It was going out to the business… We didn't know what was happening with those exceptions, so, we rolled out SymSure, now known as CaseWare."	**View of CM** – *data integrity* "… making sure that the files we send, the data that we've got, the data that we've loaded, that the reports that we generate – make sure everything is kosher." **Problem solving**-*manual processes* …[it]…took away a lot of the manual process and had it automated. So now it generates reports for us to tell us potentially we've got a problem…"	**View of CM –** *exception reporting & intelligence gathering* "George [the IA], … has various CM programs that looks for exceptions based on certain rules that have been predefined and agreed with the users … Then for those users to …work through and clear those exceptions… and … gathering some information about the nature of exceptions that are arising…"	**View of CM** – *validates and improves existing system* "… our [A/Cs payable] systems were pretty good and that was before CM and with CM we've tightened it up even more." **Problem solving** – *improve control* "…we always had systems that were limited in their ability to pick up duplicates."	**View of CM** – *improving reporting* CM to me feels like it's reporting, it's like producing … , weekly reports where we are actually reviewing and seeing the shape of our ledgers"	**View of CM** – *improving reporting* "A way of getting the information - because we have different systems…" **Problem solving** – *stock shrinkage* "What's happened is shrinkage has been a focus for us for a number of years now."	**View of CM** – *technical artifact* "The software, what it provides, is only as good as the criteria you give it obviously." **Problem solving** – *audit attendance* "…we weren't able to audit the time and attendance system the way we would have liked to …"

Frame domain	George	Steven	Mathew	Chris	Ken	Jason	Jack	Jane
Expectations of CM • Business improvement • Roles & relationships	**Roles & relationships** – *with internal and external parties* "It's starting to bring us closer together [with the external auditor] … [and]… with the business as well, because they see it as a genuine value add…"	**Business improvement** – *improving audit knowledge & processes* "… before I was doing CM, mostly I was trying to travel around and do the audits …, but, at that time, we didn't realize that if you look at the data before visiting the site you can …[establish] … more knowledge…"	**Business improvement –** *being proactive* So rather than… doing things reactive, we become proactive. **Roles & relationships** – *with internal auditor* [George]… drove it … it was an instance of internal audit knowing what we do …"	**Business improvement -** *Tailored and efficient reporting* "From an efficiency perspective it's good because …it's almost like automated exception reporting that is tailored…"	**Roles & relationships** – *with internal auditor* "… we work closely [with IA] … [George] very often will come in and say, oh you've got a few on here, or, there's a couple of big ones in there. More often than not we're ahead of him."	**Roles & relationships** – *with internal auditor* "… audit have actually become very proactive with their use of software … … …They often come up with some really good suggestions and we help them get the right configuration or criteria … "	**Roles & relationships –** *with internal auditor* "So all this assistance from audit in terms of CM reports…, it's been a big help… I think this is probably more of what we've wanted from our audit teams… "	**Roles & relationships** – *with internal auditor* "…I've dealt with [IA] for 12 years at that level. But this is actually working with them rather than answering their questions… "

Incorporating CM into work practices
• Use of CM
• Issues of use
• Contextual issues
  ○ Diverse and new systems
  ○ Management support
	Issues of use – *data integrity & accessibility*
	"[It] … is not only the variability of the data, the challenge often revolves around obtaining the data on a timely basis..."
	Use of CM – *performing tests and reporting to the audit committee*
	"More than eighty automated audit tests are performed on a
		Issues of use &contextual issues– *managing change & management support*
		"The challenge there was to convince business to accept it … For us, there was support from senior management in relation to CM."
		Issues of use – *designing tests & scripts*
		"…there were a
			Use of CM- *automating workflows for costing exceptions*
			"… making sure that the data that we get from the buyers is loaded correctly into our systems…"
			Use of CM – *monitoring staff*
			"…each of my guys is monitored as well on their work performance. It's about corrective
				Use of CM – *performing tests*
				"Duplicate payments is the big one and unauthorized journal entries"
				Use of CM – *monitoring staff*
				"I don't deal with any particular exceptions but I'll keep an eye on the level of exceptions and speaking plainly, if someone's not doing their job, tap them on
					Use of CM – *performing tests*
					"Duplicates … that's basically what we're using it for …"
					Issues of use – *refining the tests*
					"It can be a pain in the butt … initially because [this] … report came and there was about 3,000 entries on it…"
						Use of CM – *performing tests*
						"… [IA have] just created an ABN report, which looks at our master data files and … matches [that] to the ASIC website, so that to me is a flag and we need to have a look at that …They're also flagging all the customers that don't have ABNs on file."…
							Use of CM – *performing tests*
							"So we went from starting to monitor stock adjustments on a weekly basis to then internal audit saying look, we've got a way…"
							Issues of use – *information overload*
							"I'll never have time to follow anything up. I'm going to be getting so many
								Use of CM – *performing tests*
								"we want to see how many times a manager changes people's times because really with an automated system it shouldn't happen…"
								Issues of use – *refining the scripts*
								"[IA] provided us with really lengthy reports in the

Frame domain	George	Steven	Mathew	Chris	Ken	Jason	Jack	Jane
	daily basis." CM activities are reported to the audit committee on a quarterly basis.	lot of challenges … we were moving into a different system - from PeopleSoft to SAP - so a lot of data conversion and script changes were required… "	action… " **Issues of use –** *refining the tests* "There were a few issues in relation to the various iterations of it, but it's fine…." **Contextual issues –***diverse and new systems* "… my challenge is to move my guys from a data entry team to a data integrity team ... but I don't get that until I've got [the new system].	their shoulder and say why is it?"			reports." **Contextual issues** – *diverse and new systems* "I think it will probably help … especially when your systems aren't as robust as what they probably could be …The system that they're moving to … it gives you a lot more transparency"	beginning. We've had to … narrow them down… which has been quite a lengthy process…"

Table 2. Comparison of key elements of technological frames

Framing CM: processes of translation

The following discussion explores how CM was translated into local practice in three sections namely: IA as the translator-strategist; traversing the obligatory points of passage; and displacement and inscribing the meaning of CM.

Internal auditor as the translator-strategist: How CM became noticeable

CM was not noticeable in its own right in the earlier stages. Rather, it evolved from an opportunity that the Group Internal Audit Manager identified in relation to a problem associated with warehouse adjustments and valuing stock,

> "… basically me having ideas and it's developed that way rather than … the board saying goodness gracious me, we need continuous auditing, internal audit go away and develop it. It's been bottom up rather than top down…"[George]

The internal audit group translated the different needs and expectations of the users and the features and functionality of CM, which evolved and changed over time, as set out in Table 2. Hence, the internal audit group became, to use Callon's (1986a, 25) phrase "the spokesman of the entities he constitutes" putting desired ideas and tests into place. This endeavor was not without challenges, involving the enrolment of different human actors (eg. auditors, management, IT department, users, technology vendors, consultants) and non human actors (eg. accounting errors, scripts, exception reports, software applications, data formats) in a complex and changing socio-technical environment. Whilst, as Callon (1986b, 211), emphasizes "enrolment does not imply, nor does it exclude, pre-established roles," the successful translation of CM required close interaction and negotiation between parties, where the discussion now turns.

Traversing the obligatory points of passage: IT department, technologies and scripts

To successfully translate CM into practice, a number of "obligatory points of passage" needed to be traversed. In the first instance, Wholesale had a number of legacy systems. A critical issue for internal audit in developing the CM system was multiple formats and data accessibility. Hence the IT department, particularly in the earlier phases of CA and CM implementation, became a passageway for data accessibility, requiring negotiations between the internal audit and IT department,

> "The IT area is, quite properly, concerned with the security of enterprise data and good relations and trust are imperative in ensuring access." [George]

However, with the implementation of SAP Direct Link, another point of passage was created, which in Steven's view provided greater audit independence,

> "… SAP Direct Link … gives us independent access because, previously in the PeopleSoft time, we were relying on IT or finance to give us the data and then we'd do the testing. Independency is there because we can go directly and extract the data whenever we want, how we want and how much data we want…"

Finally, ACL scripts became a passageway through which all actors needed to pass. For example, consistent across all the participants were the problems in designing scripts in the early period to eliminate the "false positives"

> "… when you first use the tool there are thousands of exceptions and ninety-something per cent of them are false positives. It takes some time to work through those to get to a point where it's actually giving you data that can be useful. But that's just a part of the process … I think the important thing is giving the business the flexibility to design the tool so it's picking the exceptions that are useful for them…"[Chris]

Following this period of negotiation and close interactions with internal audit, the users became more accepting of the technology, where my discussion now turns.

Displacement and inscribing the meaning of CM

The negotiated meanings of CM were inscribed into scripts and daily, weekly, monthly and quarterly reports. These were distributed, acted upon and reacted to by different levels of management and auditors. As the centre of translation, the internal audit group, arranges the circulation of these inscriptions and convenes meetings about exceptions and organizes

workshops for different users to provide feedback and identity required changes and future opportunities, from the learnings and collective intelligence that is accumulating from CM reporting. Latour (1985 cf Callon 1986a, 27) states that "translation cannot be effective, i.e. lead to stable constructions, if it is not anchored to such movements, to physical and social displacements."

IMPLICATIONS, LIMITATIONS AND CONCLUSION

This paper has provided an empirical case study of a CM implementation and use in an Australian company. Using TF analysis and the concept of translation, the research has revealed how CM consists of multiple stakeholders and representations that manifest differently in varying situations and over time and are influential in the implementation and use of CM, raising a number of research implications. Firstly, CM was revealed as a multiplicity in practice rather than a unitary identity. Such findings point to the need for research approaches that emphasize the importance of subjective meanings and are sensitive to the situated practices and contexts within which these interpretations are made. Secondly, the implementation of CM was revealed as a multi-stage, bottom up and iterative process, which contradicts the more accepted top down view in the literature (Hardy 2011). Fourthly, the internal audit group played a critical role, particularly in the early phases, creating the monitoring system impacting the nature of their relationship with the business users. This points to "different independence considerations" (Vasarhelyi 2002, 263) which to date has received limited attention. Finally, internal audit capabilities in information and audit technologies, audit analytics, stakeholder interaction and managing change is required. Further research is required to establish how these are being incorporated into degree and professional programs.

The study is not without its limitations. Further cases are required to compare how CM is adopted, implemented, used and evaluated in different contexts and over time. However the paper serves to present some practical and theoretical insights into an area that is currently limited in empirical based studies.

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